

Remarks

The instant Office Action dated October 23, 2007, notes the following objections and rejections: the drawings and specification are objected to; claim 6 is objected to due to informalities; claims 1, 3, 5, 7-8 and 10 stand rejected under 35 U.S.C. § 103(a) over Chudzik (U.S. Patent No. 7,030,481) in view of Larson *et al.* (U.S. Patent No. 5,495,117); claims 2, 4 and 6 stand rejected under 35 U.S.C. § 103(a) over Chudzik and Larson and further in view of Kosaki *et al.* (U.S. Patent No. 6,268,619); and claim 9 stands rejected under 35 U.S.C. § 103(a) over Chudzik and Larson and further in view of Goldberger *et al.* (U.S. Patent No. 6,538,300).

In response to the objection to the drawings, Applicant has amended the specification to include reference numeral 43 as indicated on page 2 of this paper. Thus, Applicant requests that the objection to the drawings be removed.

In response to the objection to the specification, Applicant has amended the specification in a manner consistent with that suggested by the Examiner as is indicated on pages 2-3 of this paper. As such, Applicant requests that the objection to the specification be removed.

In response to the objection to the claim 6, Applicant has amended claim 6 to depend from claim 5, which contains antecedent basis for the first and second vertical interconnects. Thus, Applicant requests that the objection to claim 6 be removed.

Applicant respectfully traverses the § 103(a) rejection of claims 1, 3, 5, 7-8 and 10 because the cited portions of the Chudzik and Larson references do not correspond to the claimed invention which includes, for example, aspects directed to a layer of dielectric material, which is used as the dielectric of a vertical trench capacitor and also as insulation between a substrate and a vertical interconnect that extends through the substrate. The Office Action acknowledges that the Chudzik reference does not disclose that the same layer of dielectric material that forms dielectric film 3020 of trench capacitor structures 3010 is also used as insulation between substrate 200 and via 210. *See, e.g.*, Figure 3b. In an attempt to address this deficiency, the Office Action cites to portions of the Larson reference that do not appear to have any relevance to these aspects of the claimed invention. More specifically, the Office Action cites to Larson's first insulating layer 20, second insulating layer 26 and third insulating layer 36 (*see, e.g.*, Figure 4F), and the Office Action

erroneously asserts that Larson teaches that these insulating layers are used as insulation between a substrate and a vertical interconnect. In actuality, Larsen teaches that these insulating layers (20, 26, and 36) are deposited over a transistor 10, which is fabricated on a substrate. *See, e.g.*, Col. 3:46-57. The cited portions of Larson do not mention any vertical interconnect that extends through this substrate or that Larson's insulating layers (20, 26, and 36) are used as insulation between this substrate and some apparently nonexistent vertical interconnect. The cited portions of Larson also do not mention that these insulating layers (20, 26, and 36) are used as the dielectric in a vertical trench capacitor. Accordingly, the cited portions of Larson do not teach that insulating layers (20, 26, and 36) form the dielectric of a vertical trench capacitor or that these insulating layers provide insulation between a substrate and a vertical interconnect that extends through the substrate.

Applicant notes that the Chudzik reference already discloses that there is an insulating material 220 between the substrate 200 and the conductive material 230 in the via 210. *See, e.g.*, Figure 3b and Col. 4:13-15. However, Chudzik's insulating material 220, which separates the conductive material 230 from the substrate 200, is not the same layer that is used as the dielectric film 320 of trench capacitor structures 3010. Accordingly, the cited portions of Chudzik do not teach that the same layer of dielectric matter is used as both the dielectric of a vertical trench capacitor and to provide insulation between a substrate and a vertical interconnect that extends through the substrate.

In view of the above, the cited portions of the Chudzik and Larson references should not be deemed to correspond to the claimed invention. Accordingly, the § 103(a) rejection of claims 1, 3, 5, 7-8 and 10 is improper and Applicant requests that it be withdrawn.

Applicant respectfully traverses the § 103(a) rejections of claims 2, 4, 6 and 9 (each of which is based on the Chudzik and Larson references) because the cited portions of these references do not correspond to the claimed invention as discussed above in relation to the § 103(a) rejection of claim 1. In at least this regard, the § 103(a) rejections of claims 2, 4, 6 and 9 are improper because these claims depend from claim 1. That is, if an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *See, In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Accordingly, the § 103(a) rejections of claims 2, 4, 6 and 9 are improper and Applicant requests that they be withdrawn.

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In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063.

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